

Algebra Practice:

<u>Variable to Solve:</u>	<u>Equation:</u>
a_x	$\Delta x = v_{ix}t + \frac{1}{2}a_x t^2$
m_1	$m_1 v_{1i} + m_2 v_{2i} = (m_1 + m_2) v_f$
r	$F = \frac{kq_1 q_2}{r^2}$
R_1	$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2}$

$$\Delta x = v_{ix}t + \frac{1}{2}a_x t^2$$



$$\Delta x - v_{ix}t = \frac{1}{2}a_x t^2$$

$\frac{a_x t^2}{2}$

$$\frac{2}{t^2} [\Delta x - v_{ix}t] = a_x$$

$$a_x = \frac{2(\Delta x - v_{ix}t)}{t^2}$$

$$m_1 v_{1i} + m_2 v_{2i} = (m_1 + m_2) v_f$$

$$m_1 v_{1i} + m_2 v_{2i} = m_1 v_f + m_2 v_f$$

$$m_1 v_{1i} - m_1 v_f = m_2 v_f - m_2 v_{2i}$$

$$ab + ac = a(b+c)$$

$$m_1 (v_{1i} - v_f) = m_2 v_f - m_2 v_{2i}$$

$$m_1 = \frac{m_2 v_f - m_2 v_{2i}}{v_{1i} - v_f}$$

$$F = \frac{k q_1 q_2}{r^2}$$

$$r^2 = \frac{k q_1 q_2}{F}$$

$$r = \sqrt{\frac{k q_1 q_2}{F}}$$

$$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2}$$

$$\frac{R_1}{1} \cdot \frac{1}{R_{eq}} - \frac{1}{R_2} = \frac{1}{\cancel{R_1}} \cdot \frac{\cancel{R_1}}{1}$$

$$R_1 = \frac{1}{\frac{1}{R_{eq}} - \frac{1}{R_2}}$$

$$= \left[\frac{1}{R_{eq}} - \frac{1}{R_2} \right]^{-1}$$

Science:

- Figure out stuff
- better understanding of why things happen
- basic understanding of problem solving
- alternative to thinking one "thing" created everything
- Darwin
- it is interesting (potentially boring)
- use to find out what stuff is made out of to make more stuff
- understand fundamentals of life
- why stuff happens

Observation:

- something you notice about an object or process

Inference:

- taking a guess about something

More Algebra:

$$V_{fx}^2 = V_{ix}^2 + 2a_x \Delta x \quad \text{for } v_{ix}$$

$$\sqrt{V_{ix}^2} = \sqrt{V_{fx}^2 - 2a_x \Delta x}$$

$$V_{ix} = \sqrt{V_{fx}^2 - 2a_x \Delta x}$$

$$(m_1 + m_2) v_i = m_1 v_{1f} + m_2 v_{2f} \quad \text{for } m_2$$

$$m_1 v_i + m_2 v_i = m_1 v_{1f} + m_2 v_{2f}$$

$$m_2 v_i - m_2 v_{2f} = m_1 v_{1f} - m_1 v_i$$

$$m_2 (v_i - v_{2f}) = m_1 v_{1f} - m_1 v_i$$

$$m_2 = \frac{m_1 (v_{1f} - v_i)}{v_i - v_{2f}}$$